

# T. & T. ENVIRONMENTAL SERVICES

ENVIRONMENTAL CONSULTATION & TRAINING

## **CLOSURE REPORT FOR THE ABANDONMENT AND REMOVAL OF AN UNDERGROUND FUEL STORAGE TANK**

*At*

**The Boeing Company  
19503 South Normandie Avenue  
Los Angeles, CA. 90502**

*Prepared For*

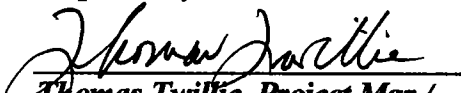
**Perry Manes, Inc.  
1101 East Spring Street  
Signal Hill, CA. 90807  
Attn: Mr. Perry Manes**

*Submitted To*


**Los Angeles City Fire Department  
Underground Tank Enforcement Unit  
Bureau of Fire Prevention  
200 North Main Street, Rm. 930, CHE  
Los Angeles, CA. 90012  
Attn: Mr. Dean J. Stivason, Inspector**

**January, 21, 1999**

**Prepared By:**

  
**Thomas Twillie, Project Mgr./  
Chemist/REA/REHS**

**Reviewed/Supervised By:**

  
**Efren V. Ancheta, P.E.  
Registered Engineer, 41704**



14616 LAKEWOOD BLVD., BELLFLOWER, CA. 90706 (310) 630-0444

## ***Table of Contents***

- 1.) Introduction***
- 2.) Underground Tank Removal and Disposal***
  - 2.1 Tank Cleaning***
  - 2.2 Degassing of Tank***
- 3.) Sampling and Analysis***
- 4.) Geology and Hydrogeology***
- 5.) Results***
- 6.) Backfill and Compaction***
- 7.) Conclusion and Recommendation***
- 8.) Appendices***

### **Figures**

***Figure 1 - Site Map***

***Figure 2 - Plot Plan***

### **Appendix**

***Appendix A - Laboratory Test Results and Chain of Custody***

***Appendix B - Marine Chemist Certificate***

***~~Appendix C - Soil Compaction Report~~***

***Appendix D - Uniform Hazardous Waste Manifest***

***Appendix E - Tank Degassing Certificate***

***Appendix F - Tanks Destruction Certificates***

***Appendix G - Permit***

***→ Appendix H - Soil Compaction Report***

*On December 18, 1998, Perry Maness, Inc. and Subcontractor Lopez General Engineering Contractors, Inc. was retained by The Boeing Company for the removal and disposal of a twelve thousand gallons unleaded gasoline underground fuel storage tank at their Torrance, California facility. The facility is located at 19503 So. Normandie Avenue, Torrance, California.*

*The facility operations have been reduced or relocated over the past several years. A significant portion of the property has been redeveloped and converted to an office and commercial occupants. The pump dispenser and island was left in place for the existing tank in operation. The unleaded gasoline underground storage tank was removed via the Los Angeles City Fire Department permit # 7572. The underground storage tank is located at the service garage, Building #20.*

### *Underground Tank Preparation*

*The underground storage tank was isolated by the disconnection of it's electrical service and piping. All residual gasoline was removed from the tank and pipings were pressure wash with the rinseate and pumped onto a vacuum tanker truck, registered to haul hazardous waste to a permitted TSD facility for recycling via an uniform hazardous waste manifest. The concrete pad was removed and the tank was excavated to exposed the top. The tank was pressure washed to remove all residual product with emission being scrubbed with a SCAQMD permitted degassing unit. The excavated soil was stockpiled on plastic and a temporary fence was installed around the tank excavation for safety purposes as required by the City of Los Angeles Fire Department.*

### *Underground Tank Removal*

*The underground tank was removed via the City of Los Angeles Fire Department permit # 7572 and was witness by Inspector, Mr. Dean J. Stivason. The twelve thousand gallons unleaded gasoline steel tank was removed from the excavation with a crane. The underground tank was loaded onto a flatbed trailer. The tank was transported to a metal recycler for disposal via a Bill of Lading and Marine Chemist Certificate. A letter of tank destruction is included in the appendix.*

### *Sampling and Analysis*

*A total of three (3) vadose soil samples were collected during the removal of the underground tank at the subject site. A soil sample was collected at each end of the tank invert of the bottom of the excavation three feet (3ft) deep. A backhoe was utilized to collect the samples from the bottom of the excavation. Then, a hand auger and hammer attached sampler lined with 1.5 inch brass liners was utilized to retrieve sample from the bucket of the backhoe. The hammer and attached sampler containing*

*the brass liner was used to retrieve the undisturbed sample. The sample was removed from the sampler in the liner and ends were covered with Teflon sheeting, capped, sealed, labeled, and place on ice. The samples were transported to a state certified analytical laboratory for analysis via a chain of custody form.*

*The soil samples were tested for Total Petroleum Hydrocarbons-gasoline (TPH-Gas) by CAL-EPA-DTSC Test Method 8015 (gasoline), Volatile Aromatic Hydrocarbons (BTXE+MTBE) by EPA Test Method 8020, and Total Lead (TTLc) by EPA Test Method 7420. The appropriate detection limits were utilized in accordance to CAL-EPA and EPA Test Protocols.*

## **5.0**

### **Geology and Hydrogeology**

*The facility is located in the southern portion of the West Coast Hydrologic Subarea of the Los Angeles Basin. More specifically, the project site lies in the Torrance Plain, which borders the Newport-Inglewood belt of hills from Ballona Gap southwest of Dominguez Gap. Water bearing sediments and marine and non-marine origin underlie the plain. Sediments of the Upper Pleistocene Lakewood Formation underlie the site. This geologic unit is approximately 150 feet below the project site. Beneath the Lakewood Formation lies the lower Pleistocene San Pedro Formation, which has a thickness of approximately 1200 feet in this area.*

*The Pleistocene San Pedro Formation is divided into various stratigraphic units with those units capable of storing water named as aquifers. These aquifers from top to bottom include: The Hollydale, Jefferson, Lynwood, Silverado, and Sunnyside Aquifers. The Silverado and Sunnyside Aquifers underlies the site. The Silverado Aquifer is composed of both continental and marine deposits. The continental deposits include coarse to fine sand and gravels interbedded with silts and clays while the marine deposits include sand, gravel, silt, and clay.*

*The local hydrogeology at the site is predominantly silts and clays to depths of 25 to 50 feet below surface grade. Below 50 feet the semi-perched aquifer consist of sedimentary deposits typical of flood-plain alluvial deposits that includes sand-filled channels with interbeds and lateral gradation to fine sand material. The upper portion of the semi-perched aquifer appears to consist of sands and silty sands with occasional discontinuous interbeds of silt and clay. Soils underlying approximately the 110 feet depth are composed of thinner beds of sand, silty sand, and clays.*

*The latest groundwater data within the vicinity of the subject site was obtained from Los Angeles County Flood Control District-Hydrology Section. Groundwater Well #794-A, located at 190<sup>th</sup> Street and Antsf RR, just west of the site, Torrance, California. The depth to groundwater from surface grade is 102.7 feet with a ground elevation of 51 feet. The last date of measurement was November 6, 1997.*

A total of three (3) soil boring samples were collected at the subject site during the removal of the underground unleaded gasoline storage tank. The soil sample test results are as follows:

Table I

## UST CLOSURE SAMPLE TEST RESULTS

Sample #	Contaminant	Matrix	Location	Concentration (Mg/kg)
TK 1A-3-98	Total Petroleum Hydrocarbons-gas	Soil	South end of tank 3 feet deep	N.D.
TK 1B-3-98	"	"	North end of tank 3 feet deep	N.D.
SP-1-3-98	"	"	Spoil pile	N.D.
TK 1A-3-98	MTBE	Soil	South end of tank	N.D.
	Benzene	"	"	N.D.
	Toluene	"	"	N.D.
	E. Benzene	"	"	N.D.
	Xylenes	"	"	N.D.
	Lead	"	"	4.2 Mg/Kg.
TK 1B-3-98	MTBE	"	North end of tank	N.D.
	Benzene	"	"	N.D.
	Toluene	"	"	N.D.
	E. Benzene	"	"	N.D.
	Xylenes	"	"	N.D.
	Lead	"	"	5.1 Mg/Kg
SP-1-3-98	MTBE	"	Spoil pile	N.D.
	Benzene	"	"	N.D.
	Toluene	"	"	N.D.
	E. benzene	"	"	N.D.
	Xylenes	"	"	N.D.
	Lead	"	"	3.6 Mg/Kg

N.D. = Not Detected : MTBE= Methyl-tert-butyl Ether

*The test results of the soil samples were all non-detect for the presence of total petroleum hydrocarbons (TPHs-gas) and Volatile Aromatic Hydrocarbons (BTEX & MTBE). Therefore, the stockpile excavated soil maybe used for backfill and no further action at the site is required.*

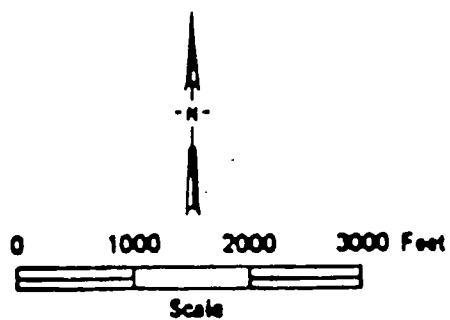
#### **8.0**

#### **Recommendation and Conclusion**

*The removal and abandonment of the underground-unleaded gasoline storage tank has been completed. The underground tank was excavated, cleaned, removed and disposed off in according to the City of Los Angeles Fire Department UST regulations. The underground tank rinseate was transported and disposed via a uniform hazardous waste manifest at a permitted TSD facility. The tank was transported to a metal recycler for disposal via a bill of laden and a marine chemist certificate. The closure soil samples test results were all non-detect and below regulatory agencies action limits requiring no further action. It is recommended that the tank excavation be backfill with the excavated stock piled and clean imported material. The underground tank removal and abandonment project is considered to be complete requiring no further action at the subject site.*

## ***Appendix***

### Site Map





**Figure -2**

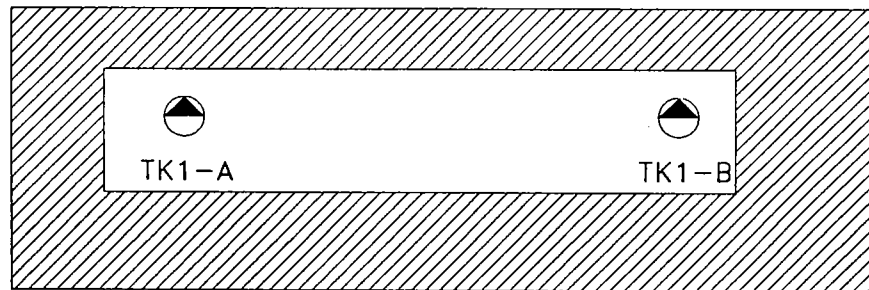
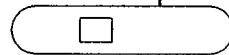
**Plot Plan**

# Figure 1: Site Plan

Boeing Torrance  
19503 South Normandie  
Torrance, California

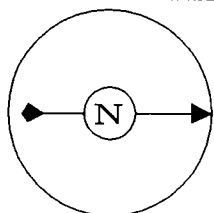
Building 20

Dispenser Island



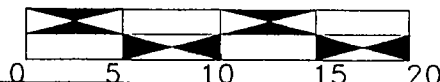
Area of Excavation

001TNTR



Field Personnel: T. Twilly  
Drawn By: K. Wojak  
Reviewed By: E. Ancheta  
Approved By: T. Twilly

SCALE IN FEET

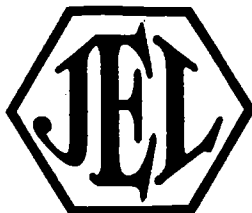


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Environmental Services

14616 Lakewood Boulevard, Bellflower CA 90706

**Appendix A**

**Laboratory Test Results and Chain of Custody**



# Jones Environmental, Inc.

Testing Laboratories

JONES ENVIRONMENTAL

P.O. Box 5387 • Fullerton, CA 92833  
(714) 449-9937 • FAX (714) 449-968

## LABORATORY RESULTS

**Client:** Lopez  
**Client Address:** 2633 E. 28<sup>th</sup> St., #624  
Signal Hill, CA 90806

**Report Date:** 12/02/98  
**JEL Ref. No.:** B-2240  
**Client Ref. No.:**

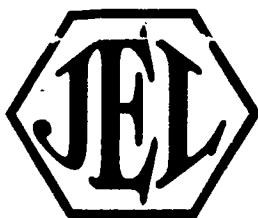
**Attn:** Thomas Twillie  
**Project:** Boeing  
**Project Address:** Long Beach, CA

**Date Sampled:** 11/24/98  
**Date Received:** 11/24/98  
**Date Analyzed:** 11/24/98  
**Physical State:** Soil

### Modified 8015 Diesel (Simulated Distillation Extended Range)

Carbon Chain Range	Sample ID Concentration (mg/Kg)			
	<u>TK-2W-</u> <u>LBD-3-98</u>	<u>TK-3W-</u> <u>LBD-3-98</u>	<u>TK-4W-</u> <u>LBD-3-98</u>	<u>TK-5W-</u> <u>LBD-3-98</u>
C6-C7	ND	ND	ND	ND
C8-C9	ND	ND	39	ND
C10-C11	ND	ND	270	ND
C12-C13	ND	ND	360	ND
C14-C15	ND	ND	180	ND
C16-C17	ND	ND	45	ND
C18-C19	ND	ND	12	ND
C20-C23	ND	ND	ND	ND
C24-C27	ND	ND	ND	ND
C28-C31	ND	ND	ND	ND
C32-C35	ND	ND	ND	ND
C36-C39	ND	ND	ND	ND
C40-C43	ND	ND	ND	ND
C44+	ND	ND	ND	ND
Total	ND	ND	910	ND
Reporting Limits	10	10	10	10
Surrogate Recovery %	116	98	95	96

ND = Not Detected



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Project: Boeing

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Project Address: Long Beach, CA

Date Analyzed: 11/24/98

Physical State: Soil

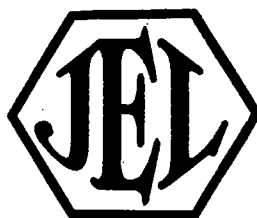
### Modified 8015 Diesel (Simulated Distillation Extended Range)

Sample ID  
Concentration (mg/Kg)

#### Carbon Chain Range

	<u>TK-1E-</u> <u>LBD-3-98</u>	<u>TK-2E-</u> <u>LBD-3-98</u>	<u>TK-3E-</u> <u>LBD-3-98</u>	<u>TK-4E-</u> <u>LBD-3-98</u>	<u>TK-5E-</u> <u>LBD-3-98</u>	<u>TK-1W-</u> <u>LBD-3-98</u>
C6-C7	ND	ND	ND	40	ND	ND
C8-C9	ND	ND	3.6	620	ND	27
C10-C11	77	ND	11	1600	ND	190
C12-C13	330	ND	29	1700	ND	370
C14-C15	200	ND	25	880	ND	240
C16-C17	58	ND	14	140	ND	50
C18-C19	ND	ND	9.0	12	ND	11
C20-C23	ND	ND	7.2	4.3	ND	ND
C24-C27	ND	ND	ND	ND	ND	ND
C28-C31	ND	ND	ND	ND	ND	ND
C32-C35	ND	ND	ND	ND	ND	ND
C36-C39	ND	ND	ND	ND	ND	ND
C40-C43	ND	ND	ND	ND	ND	ND
C44+	ND	ND	ND	ND	ND	ND
Total	670	ND	99	5000	ND	890
Reporting Limits	10	10	10	10	10	10
Surrogate Recovery %	113	76	83	85	119	87

ND = Not Detected



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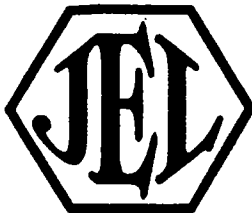
Date Received: 11/24/98  
Date Analyzed: 11/24/98  
Physical State: Soil

### Modified 8015 Diesel (Simulated Distillation Extended Range)

Sample ID  
Concentration (mg/Kg)

<u>Carbon Chain Range</u>	<u>SP-1-LBD-</u>	<u>SP-2-LBD-</u>	<u>SP-3-LBD-</u>	<u>SP-4-LBD-</u>	<u>SP-5-LBD-</u>	<u>SP-6-LBD-</u>
	<u>98</u>	<u>98</u>	<u>98</u>	<u>98</u>	<u>98</u>	<u>98</u>
C6-C7	ND	ND	ND	ND	ND	ND
C8-C9	ND	ND	ND	ND	ND	ND
C10-C11	27	ND	ND	ND	ND	ND
C12-C13	73	ND	ND	ND	ND	ND
C14-C15	68	ND	ND	ND	16	ND
C16-C17	6.7	ND	ND	ND	ND	ND
C18-C19	9.2	ND	ND	ND	ND	ND
C20-C23	2.5	ND	ND	ND	ND	ND
C24-C27	ND	ND	ND	ND	ND	ND
C28-C31	ND	ND	ND	ND	ND	ND
C32-C35	ND	ND	ND	ND	ND	ND
C36-C39	ND	ND	ND	ND	ND	ND
C40-C43	ND	ND	ND	ND	ND	ND
C44+	ND	ND	ND	ND	ND	ND
Total	190	ND	ND	ND	16	ND
Reporting Limits	10	10	10	10	10	10
Surrogate Recovery %	117	83	109	81	103	98

ND = Not Detected



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**Date Received:** 11/24/98

**Date Analyzed:** 11/24/98

**Physical State:** Soil

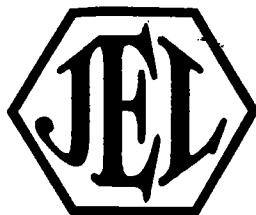
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### ANALYSES REQUESTED

1. Mod 8015 Diesel - Simulated Distillation Extended Range

Approval:

Steve Jones, Ph.D.  
Laboratory Manager



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Attn: Thomas Twillie

Date Sampled: 11/24/98

Project: Boeing  
Project Address: Long Beach, CA

Date Received: 11/24/98

Date Analyzed: 11/24/98

Physical State: Soil

## Modified 8015 Diesel (Simulated Distillation Extended Range)

Sample Spiked: SP-2-LBD-98

<u>Parameter</u>	<u>MS Recovery (%)</u>	<u>MSD Recovery (%)</u>	<u>RPD</u>	<u>Acceptability Range (%)</u>
Diesel	96%	100%	3.8%	65 - 125

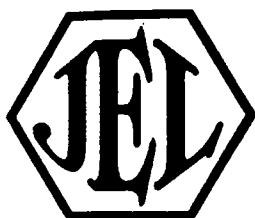
Sample Spiked: SP-3-LBD-98

<u>Parameter</u>	<u>MS Recovery (%)</u>	<u>MSD Recovery (%)</u>	<u>RPD</u>	<u>Acceptability Range (%)</u>
Diesel	103%	95%	8.3%	65 - 125

Method Blank = Not Detected

MS = Matrix Spike  
MSD = Matrix Spike Duplicate  
RPD = Relative Percent Difference





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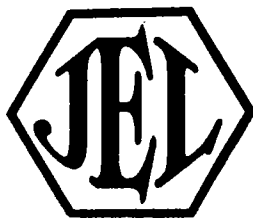
## LABORATORY RESULTS

<b>Client:</b>	T & T Environmental Services	<b>Report Date:</b>	12/23/98
<b>Client Address:</b>	14616 Lakewood Blvd. Bellflower, CA 90706	<b>JEL Ref. No.:</b>	B-2263
		<b>Client Ref. No.:</b>	
<b>Attn:</b>	Thomas Twillie	<b>Date Sampled:</b>	12/18/98
		<b>Date Received:</b>	12/22/98
<b>Project:</b>	Boeing	<b>Date Analyzed:</b>	12/22/98
<b>Project Address:</b>	Torrance, CA	<b>Physical State:</b>	Soil

### EPA 8020 - Volatile Aromatic Hydrocarbons

<u>Sample ID</u>	<u>Concentration (mg/Kg)</u>					<u>Reporting Limits (mg/Kg)</u>	<u>Surrogate Recovery %</u>
	<u>MTBE</u>	<u>Benzene</u>	<u>Toluene</u>	<u>Ethylbenzene</u>	<u>Xylenes</u>		
SP-1-3-98	ND	ND	ND	ND	ND	0.005	85
TK1A-3-98	ND	ND	ND	ND	ND	0.005	98
TK1B-3-98	ND	ND	ND	ND	ND	0.005	82

ND = Not Detected



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## QUALITY CONTROL INFORMATION

Client: T & T Environmental Services  
Client Address: 14616 Lakewood Blvd.  
Bellflower, CA 90706

Report Date: 12/23/98  
JEL Ref. No.: B-2263  
Client Ref. No.:

Attn: Thomas Twillie

Date Sampled: 12/18/98

Project: Boeing  
Project Address: Torrance, CA

Date Received: 12/22/98

Date Analyzed: 12/22/98

Physical State: Soil

## EPA 8020 - Volatile Aromatic Hydrocarbons

Sample Spiked: TANK 4 (B2262)

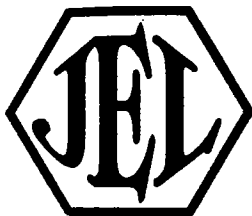
<u>Parameter</u>	<u>MS</u> <u>Recovery (%)</u>	<u>MSD</u> <u>Recovery (%)</u>	<u>RPD</u>	<u>Acceptability</u> <u>Range (%)</u>
Toluene	107%	103%	3.6%	65 - 125
o-Xylene	103%	100%	2.6%	65 - 125

Method Blank = Not Detected

MS = Matrix Spike

MSD = Matrix Spike Duplicate

RPD = Relative Percent Difference



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Bellflower, CA 90706

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**Client Ref. No.:**

**Attn:** Thomas Twillie

**Date Sampled:** 12/18/98

**Project:** Boeing  
**Project Address:** Torrance, CA

**Date Received:** 12/22/98

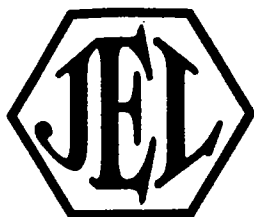
**Date Analyzed:** 12/22/98

**Physical State:** Soil

### Modified EPA 8015 - Volatile Hydrocarbons (Gasoline)

<u>Sample ID</u>	<u>Concentration</u> <u>(mg/Kg)</u>	<u>Surrogate</u> <u>Recovery %</u>	<u>Reporting</u> <u>Limits</u> <u>(mg/Kg)</u>
SP-1-3-98	ND	98	1.0
TK1A-3-98	ND	105	1.0
TK1B-3-98	ND	115	1.0

ND = Not Detected



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## QUALITY CONTROL INFORMATION

Client:	T & T Environmental Services	Report Date:	12/23/98
Client Address:	14616 Lakewood Blvd. Bellflower, CA 90706	JEL Ref. No.:	B-2263
		Client Ref. No.:	
Attn:	Thomas Twillie	Date Sampled:	12/18/98
		Date Received:	12/22/98
Project:	Boeing	Date Analyzed:	12/22/98
Project Address:	Torrance, CA	Physical State:	Soil

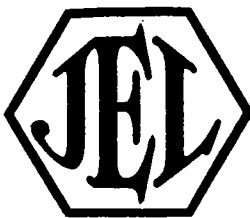
## Modified EPA 8015 - Volatile Hydrocarbons (Gasoline)

Sample Spiked: TANK 4 (B-2262)

<u>Parameter</u>	<u>MS Recovery (%)</u>	<u>MSD Recovery (%)</u>	<u>RPD</u>	<u>Acceptability Range (%)</u>
Gasoline	107%	104%	2.9%	65 - 125

Method Blank = Not Detected

MS = Matrix Spike  
MSD = Matrix Spike Duplicate  
RPD = Relative Percent Difference



# Jones Environmental, Inc.

Testing Laboratories

JONES ENVIRONMENTAL

P.O. Box 5387 • Fullerton, CA 92838  
(714) 449-9937 • FAX (714) 449-9685

## LABORATORY REPORT

**Client:** T & T Environmental Services  
**Client Address:** 14616 Lakewood Blvd.  
Bellflower, CA 90706

**Report Date:** 12/23/98  
**JEL Ref. No.:** B-2263  
**Client Ref. No.:**

**Attn:** Thomas Twillie

**Date Sampled:** 12/18/98

**Project:** Boeing  
**Project Address:** Torrance, CA

**Date Received:** 12/22/98

**Date Analyzed:** 12/22/98

**Physical State:** Soil

---

### ANALYSES REQUESTED

1. EPA 8020 - Volatile Aromatic Hydrocarbons
2. Mod 8015 Gasoline - Volatile Hydrocarbons

Approval:

Steve Jones, Ph.D.  
Laboratory Manager





# Del Mar Analytical

2852 Alton Ave., Irvine, CA 92606 (949) 261-1022 FAX (949) 261-1228  
1014 E. Cooley Dr., Suite A, Colton, CA 92324 (909) 370-4667 FAX (909) 370-1046  
16525 Sherman Way, Suite C-11, Van Nuys, CA 91406 (818) 779-1844 FAX (818) 779-1843  
9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (619) 505-9596 FAX (619) 505-9689  
2465 W. 12th St., Suite 1, Tempe, AZ 85281 (602) 968-8272 FAX (602) 968-1338

Jones Env. Testing Laboratories Client Project ID: B-2263  
P.O. Box 5387 T&T, Boeing  
Fullerton, CA 92838 Sample Descript: Soil  
Attention: Joanna Johnson First Sample #: HL03365  
QC Batch: HL30ME3S

Sampled: Dec 18, 1998  
Received: Dec 23, 1998  
Extracted: Dec 30, 1998  
Analyzed: Dec 30, 1998  
Reported: Dec 30, 1998

## LEAD (EPA 6010B)

Laboratory Number	Sample Description	Reporting Limit mg/Kg (ppm)	Sample Result mg/Kg (ppm)
HL03365	SP-1-3-98	2.0	3.6
HL03366	TK1A-3-98	2.0	4.2
HL03367	TK1B-3-98	2.0	5.1

Analytes reported as N.D. were not present at or above the reporting limit.

DEL MAR ANALYTICAL (ELAP #1197)

  
Jim Hatfield  
Project Manager

Results pertain only to samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical.

HL03365.JEL <1 of 2>



# Del Mar Analytical

2852 Alton Ave., Irvine, CA 92606 (949) 261-1022 FAX (949) 261-1228  
1014 E. Cooley Dr., Suite A, Cotton, CA 92324 (909) 370-4667 FAX (909) 370-1046  
16525 Sherman Way, Suite C-11, Van Nuys, CA 91406 (818) 779-1844 FAX (818) 779-1843  
9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (619) 505-9596 FAX (619) 505-9689  
2465 W. 12th St., Suite 1, Tempe, AZ 85281 (602) 968-8272 FAX (602) 968-1338

Jones Env. Testing Laboratories  
P.O. Box 5387  
Fullerton, CA 92838  
Attention: Joanna Johnson

## Method Blank

QC Batch: HL30ME3S

Extracted: Dec 30, 1998  
Analyzed: Dec 30, 1998  
Reported: Dec 30, 1998

## LEAD (EPA 6010B)

Laboratory Description	Reporting Limit mg/Kg (ppm)	Sample Result mg/Kg (ppm)
Method Blank	2.0	N.D.

Analytes reported as N.D. were not present at or above the reporting limit.

DEL MAR ANALYTICAL (ELAP #1197)

  
Jim Hatfield  
Project Manager

Results pertain only to samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical.

HL03365.JEL <2 of 2>





## MS/MSD DATA REPORT

METHOD: METALS

Instrument: ICP

Matrix: Soil

Date

Analyzed: 12/30/98

Sample: HL03650

Batch: HL30ME3S

Analyte	R1	Sp	MS	MSD	PR1	PR2	RPD	MEAN PR	Acceptance Limits	
	mg/Kg	mg/Kg	mg/Kg	mg/Kg	%	%	%	%	RPD	MPR
Lead	0	2.0	1.80	1.82	90%	91%	1.1%	91%	20	80-120

### Definition of Terms:

R1..... Result of Sample Analysis  
Sp..... Spike Concentration Added to Sample  
MS..... Matrix Spike Result  
MSD..... Matrix Spike Duplicate Result  
PR1..... Percent Recovery of MS;  $((MS-R1) / SP) \times 100$   
PR2..... Percent Recovery of MSD;  $((MSD-R1) / SP) \times 100$   
RPD..... Relative Percent Difference;  $((MS-MSD)/(MS+MSD)/2) \times 100$   
Acceptance Limits..... Statistically determined on an annual basis.

DEL MAR ANALYTICAL

**JONES  
ENVIRONMENTAL  
TESTING LABORATORIES**

P.O. BOX 5387  
FULLERTON, CA 92635  
Tel: 714 449-9937  
Fax: 714 449-9685

Report  
Invoice to:

# Chain-Of-Custody Record

Client **T&T**  
Project Name **Boeing**  
Project Address **Torrance**  
Project Contact **Joanna Johnson**

Date **12/23/98**

Client Project #

**Turn Around Requested:**

- ☐ Immediate Attention  
☐ Rush 24-48 Hours  
☐ Rush 72-96 Hours  
☐ Normal  
☐ Mobile Lab

Analysis Requested

Sample Matrix: Soil (S), Sludge (SL), Aqueous (A)  
**TOTAL Lead**

JEL Project #

**B-226**


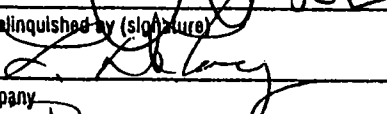
Page

1 of 1

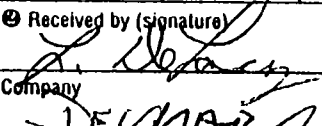
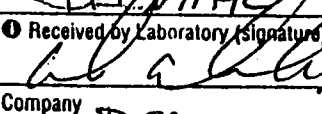
**Lab Use Only**

Sample Condition/  
as Received: ☒ Intact  
Chilled ☒ yes ☐ no  
Sealed ☐ yes ☐ no

Sample ID	Sample Location	Date	Time	Laboratory Sample Number	Sample Matrix: Soil (S), Sludge (SL), Aqueous (A)	Analysis Requested	Number of Containers	Container/Comments
SP-1-3-98		12/18/98			S X		1	
TK1A-3-98		↓			S X		1	
TK1B-3-98		↓			S X		1	

① Relinquished by (signature)   
Company **JEL**  
② Relinquished by (signature)   
Company **DELMAR**

Date **12/23/98**  
Time **2:05 PM**  
Date **12/23/98**  
Time **6:00 PM**

③ Received by (signature)   
Company **DELMAR**  
④ Received by Laboratory (signature)   
Company **DELMAR**

Date **12/23/98**  
Time **2:05 PM**  
Date **12/23/98**  
Time **6:00 PM**

Total Number of Containers

Additional Comments

**Appendix B**

**Marine Chemist Certificate**

Thomas D. Beck & Assoc., Inc.  
dba HARBOR TESTING LABORATORY  
24 HOUR PHONE: (562) 492-9646

# MARINE CHEMIST CERTIFICATE

Serial # 09588

LOPEZ ENRG

BOEING

18 DEC 98

Survey Requested By

Vessel Owner or Agent

Date

UNDERGROUND TANK

U.S.T.

199015 NORMANDE

Vessel

Type of Vessel

Specific Location of Vessel

GASOLINE

LEL, O<sub>2</sub>, VOLUME

0795

Last Cargo

Tests Performed

Time Survey Completed

UNDERGROUND STORAGE  
TANK MARKED WITH  
YELLOW SPRAY PAINT  
9588

TESTED: 0% LEL  
20.8% O<sub>2</sub>

SAFE FOR HOT WORK  
NOT SAFE FOR WORKERS  
TO ENTER

TANK HAS BEEN CLEANED

MSA MICROMAN SN 3236 CALIBRATED 0445 HRS 18 DEC 98

In the event of any physical or atmospheric adversely affecting the STANDARD SAFETY DESIGNATIONS assigned to any of the above spaces, or if any doubt, immediately stop all work and contact the undersigned Marine Chemist.

QUALIFICATIONS: Transfer of ballast of manipulation of valves or closure equipment tending to alter conditions in pipe lines, tanks or compartments subject to gas accumulation, unless specifically approved in this Certificate, requires inspection and endorsement or reissue of Certificate for the spaces so affected. All lines, vents, heating coils, valves, and similarly enclosed appurtenances shall be considered "not safe" unless otherwise specifically designated.

STANDARD SAFETY DESIGNATIONS (partial list, paraphrased from NFPA 306 Subsections 2-3.1 through 2-3.5, and Subsection 6-3.2)

SAFE FOR WORKERS: Means that in the compartment of space so designated: (a) the oxygen content of the atmosphere is at least 19.5 percent by volume; and that, (b) toxic materials in the atmosphere are within permissible concentrations; and that, (c) the residues are not capable of producing toxic materials under existing atmospheric conditions while maintained as directed on the Marine Chemist's Certificate.

NOT SAFE FOR WORKERS: Means that in the compartment of space so designated, the requirements of Safe for Workers have not been met.

ENTER WITH RESTRICTIONS: Means that in any compartment or space so designated, entry for work may be made only if conditions of proper protective equipment, clothing, and time are specified.

SAFE FOR HOT WORK: Means that in any compartment designated: (a) oxygen content of the atmosphere is at least 19.5 percent by volume, with the exception of inerted spaces or where external hot work is to be performed; and that, (b) the concentration of flammable materials in the atmosphere is below 10 percent of the lower flammable limit; and that, (c) the residues are not capable of producing a higher concentration than permitted by (b) above under existing atmospheric conditions in the presence of fire, and while maintained as directed on the Marine Chemist's Certificate; and further, that, (d) all adjacent spaces containing or having contained flammable or combustible materials have been cleaned sufficiently to prevent the spread of fire, or are satisfactorily inerted, or, in the case of fuel tanks or lube oil tanks, or engine room or fire room bilges, have been treated in accordance with the Marine Chemist's requirements.

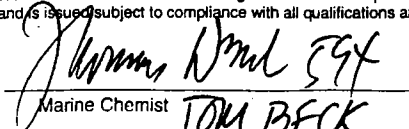
NOT SAFE FOR HOT WORK: Means that in the compartment so designated, the requirements of Safe for Hot Work have not been met.

CHEMIST'S ENDORSEMENT. This is to certify that I have personally determined that all spaces in the foregoing list are in accordance with NFPA 306 Control of Gas Hazards on Vessels and have found the condition of each to be in accordance with its assigned designation.

"The undersigned acknowledges receipt of this Certificate under Section 2-6 of NFPA 306 and understands conditions and limitations under which it was issued."

This Certificate is based on conditions existing at the time the inspection herein set forth was completed and is issued subject to compliance with all qualifications and instructions.

Signed  Date

Signed  Marine Chemist TOM BECK Certificate No.

~~Appendix C~~

~~Soil Compaction Report~~

SEE APPENDIX H

*Appendix D*

*Uniform Hazardous Waste Manifest*

IN CASE OF EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA, CALL 1-800-852-7550

UNIFORM HAZARDOUS  
WASTE MANIFEST

1. Generator's US EPA ID No.

Manifest Document No.

2. Page 1

Information in the shaded areas  
is not required by Federal law.

CA D 0 0 9 5 1 0 0 0 5 0 9 5 1 5

of 1

## 3. Generator's Name and Mailing Address

Douglas Aircraft Co. 1715 DOWD-D120

1855 Lakewood Blvd Long Beach CA 90846

## 4. Generator's Phone (182) 185-5524

## A. State Manifest Document Number

98309515

## B. State Generator's ID

HIAEF36005698

## 5. Transporter 1 Company Name

Ecology Control Industries

## 6. US EPA ID Number

CA D 0 0 2 0 3 0 1 7 5

## C. State Transporter's ID

## D. Transporter's Phone

(310) 320-2555

## 7. Transporter 2 Company Name

## 8. US EPA ID Number

## E. State Transporter's ID

## F. Transporter's Phone

## 9. Designated Facility Name and Site Address

DeMingo Kardon

2000 North Alameda Street

Compton CA 90222

## 10. US EPA ID Number

CA T 0 8 0 0 1 3 3 5 2

## G. State Facility's ID

## H. Facility's Phone

(310) 537-7100

## 11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)

a. Waste Flammable liquids (UN 1993) (DOT 1001)

## 12. Containers

No.

Type

## 13. Total Quantity

## 14. Unit Wt/Vol

## 15. Waste Number

001

TT

04520  
10390 P

State

331

EPA/Other

D001

b.

State

EPA/Other

c.

State

EPA/Other

d.

State

EPA/Other

## J. Additional Descriptions for Materials Listed Above

11a. 159524. Water contaminated with gasoline

## K. Handling Codes for Wastes Listed Above

a.

b.

c.

d.

## 15. Special Handling Instructions and Additional Information

24 Hour Emergency Telephone Number (800) 424-3800 (Chemtrec). DOT ERG#11a) 128

Site Address 19500 South Normandie Ave Torrance CA 90502

## 16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

## Printed/Typed Name

Mica Sathurst

## Signature

Mica Sathurst

Month

Day

Year

12/17/98

## 17. Transporter 1 Acknowledgement of Receipt of Materials

## Printed/Typed Name

Mica Sathurst

## Signature

Mica Sathurst

Month

Day

Year

12/17/98

## 18. Transporter 2 Acknowledgement of Receipt of Materials

## Printed/Typed Name

Mica Sathurst

## Signature

Mica Sathurst

Month

Day

Year

12/17/98

## 19. Discrepancy Indication Space

## 20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

## Printed/Typed Name

Mica Sathurst

## Signature

Mica Sathurst

Month

Day

Year

12/17/98

DO NOT WRITE BELOW THIS LINE.

**Appendix E**

**Tank degassing Certificate**



WEECO

WESTERN ENVIRONMENTAL ENGINEERS CO.

1780 E. McFadden Ave. (Suite 117)  
Santa Ana, CA 92705

(714) 542-2644  
FAX (714) 542-2520

January 26, 1999

To: Boeing Co.  
Lopez General Engineering Contractors Inc.

To Whom It May Concern:

We would like to inform you that WEECO has performed the degassing services to the following addresses on specified dates.

On December 15, 1998 at 3558 Lakewood Boulevard, Long Beach, California.  
AQMD notification reference number was DL 98-0347.

On December 17, 1998 at 19501 Normandie Avenue, Torrance, California.  
AQMD notification reference number was DL 98-0435.

If you have any questions, please contact Charles Choi at (714) 542-2644.

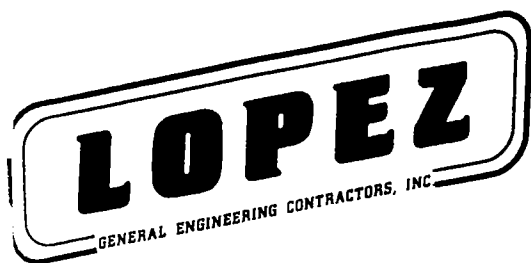
Sincerely,



Charles Choi  
Western Environmental Engineers Co.

**Appendix F**

**Tank Destruction Certificate**



December 21, 1998

TRANSMITTED VIA FAX AND  
U.S. MAIL

Mr. Jorge Berdini  
BOEING  
3855 Lakewood Blvd.  
Long Beach, CA 90846

SUBJECT: TANK DESTRUCTION CERTIFICATE

Dear Mr. Berdini,

This letter is to certify tank number(s):  
\* 9588

In accordance with Marine Chemist Certificate, 9588 (1)  
underground storage tank was received from Boeing Aircraft  
- 19901 S. Normandie Ave., Torrance.

Tank was torch cut into scrap classification of #1 Prepared  
Scrap, cut into pieces no longer than (5) five feet or wider  
than 1 1/2 feet in size, therefore rendering this tank into  
scrap steel and sold as such. Tank was cut at Lopez yard,  
222 "F" Street, Wilmington, California.

Burner(s): Santos Gonzalez

Juan Lopez  
Authorized Signature

Javier Vasquez

December 21, 1998  
Date

Customer Name : Boeing Aircraft - Torrance

Customer P.O.#: \_\_\_\_\_

Not Valid without the corporate seal and signature

**Appendix G**

**Tank Removal Permit**

## Division 5 Permit - Atmospheric Underground Tank

Fire Dept Use Only

Data Management Unit: <i>Tanks are monitored and fees paid</i> <b>S. Mayung</b> Signature	LAFD Unified Program Facility ID: <del>001361-1</del> 30279-3	Permit No. 7572	Fire Station #: 79	Date Granted: 12/9/98
	Enforcement Inspector Stivason	Permit Type: Abandonment by Removal	Expiration Date: 12/9/99	

## LOCATION INFORMATION

Doing Business As (DBA): BOEING - McDONNELL DOUGLAS		EPA ID No. (not required for Installation or Monitoring) CAC 001487880	
Address: Number 19503	Dir. S	Street Name NORMANDIE	St., Ave., Blvd., etc. AVE
City: Los Angeles	State: CA	Zip:	

## PROPERTY OWNER

Name: BOEING - McDONNELL DOUGLAS	Phone No.: 562-497-5849
Address: 4060 N. LAKEWOOD BLVD. 6th FLOOR	
City: LONG BEACH	State: CA Zip: 90808-1700
Print Name: NEIL HAINES	Signature: <i>FOR Neil Haines</i>

## CONTRACTOR INFORMATION

Company Name: Maness Environmental	Phone No.: 310-595-4555
Address: PO Box 90939 1101 E. Spring St	
City: Long Beach	State: Calif. Zip: 90809
City Business Number: 704659	State Contractors Number: 553633
Print Name: ED WARDLE	Signature: <i>Ed Wardle</i>
Work Comp Number: 7081738	Title: PROJ. MGR

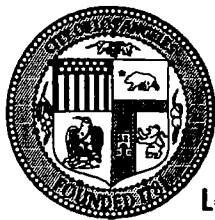
ITEM	QTY.	NOTES:
<input type="checkbox"/> UST(s) Installation		
<input checked="" type="checkbox"/> UST(s) Abandonment by Removal	1	1 - 12K GASOLINE , 1 DISPENSER
<input type="checkbox"/> UST(s) Abandonment-In-Place		
<input type="checkbox"/> UST(s) Tank Entry / Lining / Repair		
<input type="checkbox"/> UST(s) Add to / Alter: Monitor / Piping / Disp.		
<input type="checkbox"/> Site Assessment		
<input type="checkbox"/> Emergency Plan Check / Site Assessment		

**APPROVED**  
12-9-98  
LOS ANGELES FIRE DEPARTMENT  
BUREAU OF FIRE PREVENTION

BY

Inspector Name: Nealy

Inspector Signature:



# CITY OF LOS ANGELES

## INVOICE

### Los Angeles City Fire Department Unified Program Underground Storage Tank Fees for Service

#### Applicant/Contractor Information:

Name of Applicant: ED WARDLE  
Representing: Maness Environmental  
(Company Name/Self)  
Applicant Phone No.: 310-595-4555

#### Site Information:

LAFD Facility ID No.: 001361-1  
Business Name (DBA): BOEING - McDONNELL DOUGLAS  
Site Address: 19503 S NORMANDIE AVE  
Los Angeles CA  
City State Zip

Date:	<u>12/9/98</u>
Invoice No.:	<u>1572</u>
Permit No.:	<u>7572</u>
Permit Type:	<u>Abandonment by Removal</u>
Inspection District:	<u>423</u>
Plan Check Inspector:	<u>Nealy</u>
Enforcement Inspector:	<u>Stivason</u>

#### Type of Permit Requiring Plan Check and/or Inspection (Check One)

	Minimum Fee:	Fee:
<input type="checkbox"/> Installation	\$306.00	
<input checked="" type="checkbox"/> Abandonment by Removal Number of Tanks: <u>1</u>	\$204.00 plus \$102.00 for each additional tank	\$204.00
<input type="checkbox"/> Abandonment-in-Place	\$306.00	
<input type="checkbox"/> Add to/Alter: Monitoring, Piping, Dispenser	\$306.00	
<input type="checkbox"/> Tank Entry, Lining, Repair	\$306.00	
<input type="checkbox"/> Site Assessment	\$102.00	
<input type="checkbox"/> Emergency Plan Check / Site Assessment	\$408.00	

Total Due:

\$204.00

Plan Check and Inspection services are calculated on a fee for service basis. Each type of transaction has been assigned a charge based on the estimated time required for the service.

If Plan Check/Inspection services exceed the assigned hours, additional charges will accrue in six minute increments. These additional charges will be billed to the Responsible Party.

For Cash Payments:  
BILLING & ACCOUNTS RECEIVABLE  
10TH FLOOR, RM. NO. 1070

**PAID**  
12-9-98

AMOUNT PAID \$

204<sup>00</sup>

SIGNATURE:

S. Myung



Plan Check #:

Reference #:

Event Code:

Grading

City of Los Angeles - Department of Building and Safety

Status: Ready to Issue

**APPLICATION FOR GRADING PERMIT**

Status Date: 12/14/98

Over the Counter Permit

**AND GRADING CERTIFICATE**

Printed on: 12/14/98 15:02:01

1. TRACT	BLOCK	LOT(s)	ARB	MAP REF #	PARCEL ID # (PIN)	2. BOOK/PAGE/PARCEL
RANCHO SAN PEDRO		MARIA DE LOS REYES DOMIN		S C C 3284 C F 145 MA	057B193 3	7351 - 003 - 014

**3. PARCEL INFORMATION**

BAS Branch Office - SP

Energy Zone - 6

Thomas Brothers Map Grid - 764

Council District - 15

Lot Size - IRR

Census Tract - 2920.000

Lot Type - Corner

District Map - 057B193

Thomas Brothers Map Grid - 763

ZONE(S): M3-1 /

**4. DOCUMENTS****5. CHECKLIST ITEMS****6. PROPERTY OWNER, TENANT, APPLICANT INFORMATION**

Owner(s):

Mcdonnell Douglas Realty Co

4060 Lakewood Blvd 6 FLR

LONG BEACH CA 90808

Tenant:

Applicant: (Relationship: Contractor)

(562) 426-1196

**7. EXISTING USE****PROPOSED USE**

60 Grading - Non-Hillside

**8. DESCRIPTION OF WORK**REMOVE ONE 12,000 GAS UNDERGROUND FUEL TANK (GASOLINE)  
& BACK FILL(9'x35'x12'deep)**9. # Bldgs on Site & Use:** MANUF.**10. APPLICATION PROCESSING INFORMATION**

BLDG. PC By:

DAS PC By:

OK for Cashier: Pete Ortiz

Coord. OK: \_\_\_\_\_

Signature:

Date: \_\_\_\_\_

For information and/or inspection requests originating within LA County,  
call toll-free (888)-LA4BUILD; outside LA County, call (213)-977-6941.

For Cashier's Use Only

W/O #: 83002726

**11. PROJECT VALUATION & FEE INFORMATION** Final Fee Period

Permit Valuation: 140 cu yd

PC Valuation:

FINAL TOTAL Grading	354.65
Permit Fee Subtotal Grading	295.00
Plan Check Subtotal Grading	
O.S. Surcharge	6.30
Sys. Surcharge	18.90
Planning Surcharge	9.45
Planning Surcharge Misc Fee	5.00
Permit Issuing Fee	20.00

12/14/98 03:21:20PM SP01 T-2318 C 13	
GRADING PERMIT	295.00
INVOICE # 0000000 PF	
BLDG PLAN CHC	20.00
SYS DEV	18.90
ONE STOP	6.30
MISCELLANEOUS	5.00
CITY PLAN SIRC	9.45
TOTAL	354.65
CHECK	354.65

98SP 29234

Sewer Cap ID:

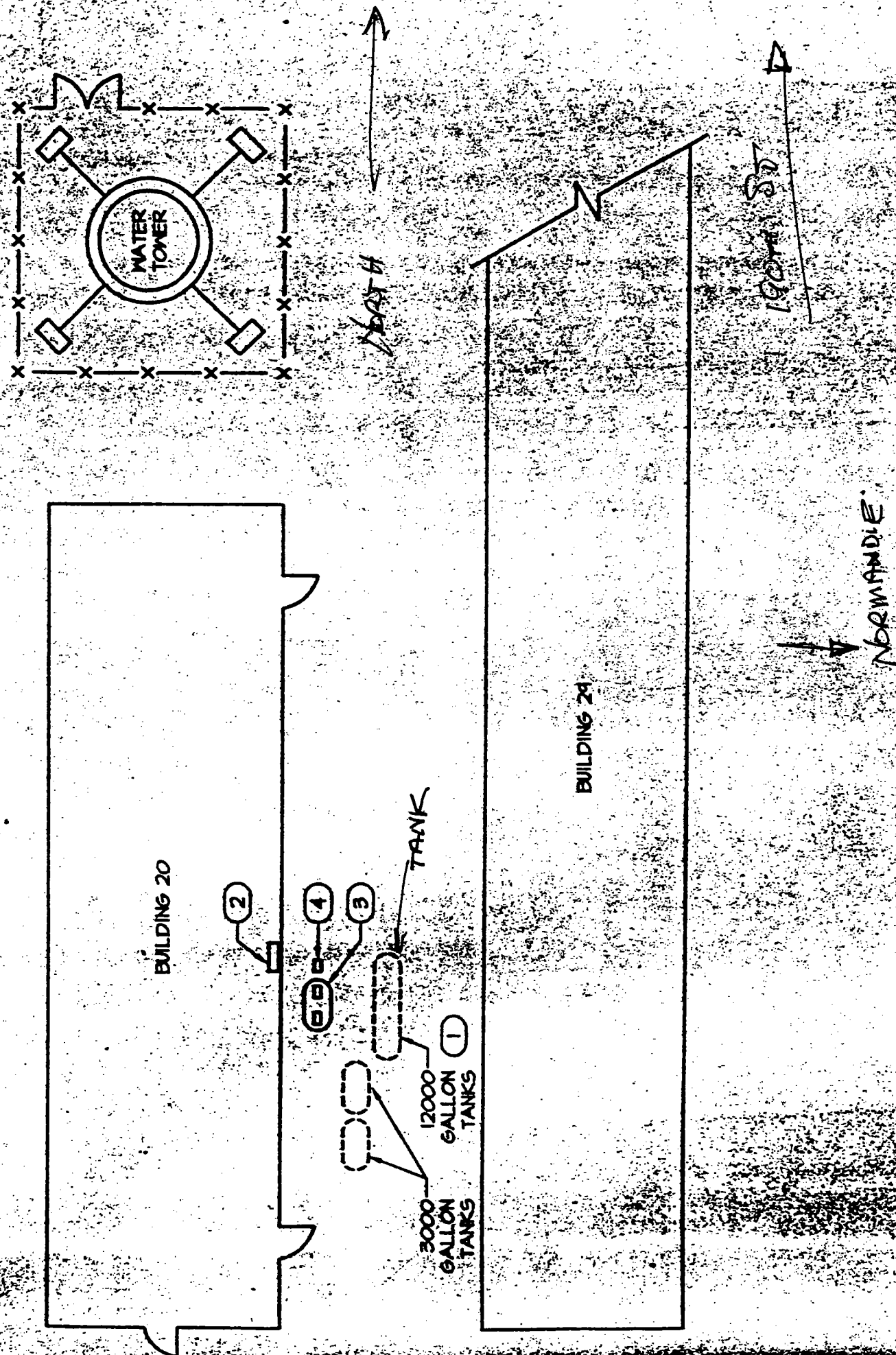
Total Bond(s) Due:

**12. ATTACHMENTS**

Plot Plan

BOE-C6-0070437

BOEING - TORRANCE (DOUGLAS)  
19503 So NORMANDIE  
LOS ANGELES CA





RECEIVED FROM 6273109

11.12.1998 15:54

Dept. <b>DIV TAX</b>	Co. <b>BRC</b>
Phone #	Phone # <b>(562) 627-3073</b>
Fax # <b>(562) 593-1250</b>	Fax #

1998

**RECEIVED**  
**OCT 16 1998**

# JOINT CONSOLIDATED ANNUAL TAX BILL

CITIES, COUNTY, SCHOOLS AND ALL OTHER TAXING AGENCIES IN LOS ANGELES COUNTY  
 SECURED PROPERTY TAX FOR FISCAL YEAR JULY 1, 1998 TO JUNE 30, 1999  
 MARK J. SALADINO, TREASURER AND TAX COLLECTOR

19

MORC-CRS

## COUNTY OF LOS ANGELES

OWNER OF RECORD AS OF JANUARY 1, 1998  
 SAME AS BELOW

7351 003 014  
 MCDONNELL DOUGLAS REALTY CO  
 4060 N LAKEWOOD BLVD 6 FLR  
 LONG BEACH CA 90808-1700

PROPERTY LOCATION AND / OR PROPERTY DESCRIPTION  
 19503 NORMANDIE AVE LOS ANGELES  
 FOR DBSC SEE ASSESSOR'S MAPS

ACCOUNT NO.	TRMT NO.	DIVISION INDEX BATCH NO.	RIO	ASSESSOR'S ID. NO.						TAXA
	42903	95003226	29	98	000	7351	003	014	00309	

DATE 98-99	CURRENT ASSESSED VALUE	TAXABLE VALUE
LAND	14178916	14178916
IMPROVEMENTS	25097569	25097569
FIXTURES	3446599	3446599
PERS PROP	15491872	15491872
TOTAL LESS EXEMPTION		58214956
NET TAXABLE VALUE		58214956

*fixed prop.* 585 306.25  
*personal* 212 238 65

**BEFORE CALLING A COUNTY OFFICE  
 SEE REVERSE SIDE FOR  
 IMPORTANT TAXPAYER INFORMATION**

### ELECTRONIC FUND TRANSFER NUMBER

ID#: 19 7351 003 014 7 YR:98 SEQ:0003

THERE WILL BE A \$9.85 SERVICE CHARGE FOR ANY CHECK RETURNED BY THE BANK.  
 KEEP THIS UPPER PORTION FOR YOUR RECORDS YOUR CANCELLED CHECK IS YOUR RECEIPT

1998

ANNUAL

☒ MCDONNELL DOUGLAS REALTY CO  
 4060 N LAKEWOOD BLVD 6 FLR  
 LONG BEACH CA 90808-1700

1ST INSTALLMENT  
 DUE NOV. 1, 1998  
 DELINQUENT DEC. 10, 1998

MAKE CHECKS PAYABLE TO: **73805**

12-10-98

48129.21

529421-36

LOS ANGELES COUNTY TAX COLLECTOR  
 P.O. BOX 54088  
 LOS ANGELES, CA 90054-0088

98798000373510030140048129215005294213680511210

ANNUAL

MCDONNELL DOUGLAS REALTY CO  
 4060 N LAKEWOOD BLVD 6 FLR  
 LONG BEACH CA 90808-1700

2ND INSTALLMENT  
 DUE FEB. 1, 1999  
 DELINQUENT APR. 10, 1999

MAKE CHECKS PAYABLE TO: **43886**

04-10-99

31636.32

347899-58

LOS ANGELES COUNTY TAX COLLECTOR  
 P.O. BOX 54088  
 LOS ANGELES, CA 90054-0088

9879800037351003014003162632600347899588620412

DETAIL OF TAXES DUE	RATE	AMOUNT
GENERAL TAX LEVY ALL AGENCIES	000000	582149.5
VOTED INDEBTEDNESS COUNTY	001451	844.7
CITY-LOS ANGELES	030161	17558.2
METRO WATER DIST	008900	5181.1
FLOOD CONTROL	001953	834.31
UNIFIED SCHOOLS	024749	14407.6
DIRECT ASSESSMENTS FLOOD CONTROL		69886.54
CITY LND/LT 96-1		10545.52
SANITATION #5		2779.70
CITY LT NTC		4433.13
LA STORMWATER		55715.44
CITY 911 FUND		6593.08
COUNTY PARK DIST		18614.52
GREATER LA MOSQ		11.88
<b>FIRST INSTALLMENT TAXES DUE</b>		<b>481292.15</b>
<b>SECOND INSTALLMENT TAXES DUE</b>		<b>316263.26</b>
<b>TOTAL TAXES DUE</b>		<b>797555.41</b>

USE THESE NUMBERS ON ALL CHECKS AND EFTS (SCHEDULE)						Pay Key
ASSESSOR'S ID. NO.						
Year	Seq. No.	Map Book	Page	Parcel		
98	000	7351	003	014	1	
1ST INSTALLMENT						INDICATE AMOUNT PAID
481292.15						

TO PAY TOTAL TAXES SEND  
 NO. 19 STUBS WITH YOUR  
 INSTALLMENT

USE THESE NUMBERS ON ALL CHECKS AND EFTS (SCHEDULE)						Pay Key
ASSESSOR'S ID. NO.						
Year	Seq. No.	Map Book	Page	Parcel		
98	000	7351	003	014	2	
2ND INSTALLMENT						INDICATE AMOUNT PAID
316263.26						

199

90

43886

11-10-99

31636.32

347899-58

1

2

BOE-C6-0070439

**Appendix H**

**Soil Compaction Report**

# **NorCal Engineering**

Soils and Geotechnical Consultants  
10641 Humbolt Street Los Alamitos, CA 90720  
(562) 799-9469 Fax (562) 799-9459

January 26, 1999

Project Number 7819-99

Lopez Construction  
2633 E. 28th Street, No. 624  
Signal Hill, California 90806

**RE: Observation and Testing of Excavation Backfill Operations - Boeing  
Facility - Located at 19907 South Normandie Avenue, in the City of Los  
Angeles, California**

Dear Sirs:

Pursuant to your request, this firm has observed and tested excavation backfill operations at the above referenced project. Results of the compaction tests are attached and locations of these tests are shown on the accompanying Site Plan. All work was in accordance with all present day standards of the Geotechnical Engineering Industry.

## **Backfill Operations**

The fill area consisted of an excavation approximately 20 feet by 35 feet with a maximum depth of 10 feet below ground surface. The excavation was removed of all demolition debris and low density soils to expose competent native soils. The excavation bottom was observed and approved by this firm prior to placement of fill. The tank excavation was backfilled with pea gravel to within one foot below ground surface and compacted and capped with on-site soils to final grade.

Fill soils placed were compacted to a minimum of 90% of the laboratory standard in lifts not in excess of eight inches in thickness. A backhoe with sheepsfoot wheel was utilized for compaction control. No additional water was necessary to provided moisture control. The approximate limits of compacted fill are indicated on the attached Site Plan.

### Laboratory/Field Testing

The relative compaction was determined by Sand Cone Method (ASTM: D1556-82) and by the Drive Tube Method (ASTM: D2937). The maximum density of the fill soils was obtained by the laboratory standard (ASTM: D1557-78) and results are shown on Table I. Tests were performed a minimum of every 500 cubic yards placed and every two feet in depth of fill placed. Results of field density tests are presented in Table II. No chemical analysis was performed by NorCal Engineering on the tank excavation nor the backfill soils.

### Conclusions

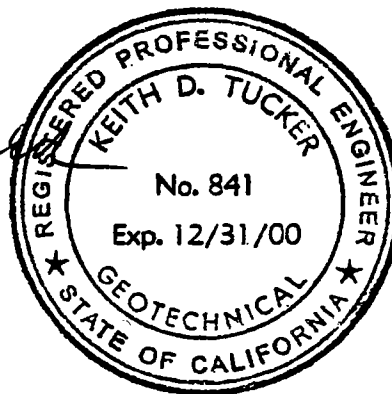
The geotechnical engineering aspects of the backfill operations have been observed and are in compliance with the geotechnical engineer's recommendations. The backfill meets secondary fill requirements for support of pavement and floor slab. The excavation has been backfilled to the approval of this firm and is suitable for its intended use.

We appreciate this opportunity to be of service to you. If you have any further questions, please do not hesitate to contact the undersigned.

Respectfully submitted,  
NORCAL ENGINEERING

*Keith D. Tucker*

Keith D. Tucker  
Project Engineer  
R.G.E. 841



*Scott D. Spensiero*

Scott D. Spensiero  
Project Manager

NorCal Engineering

**TABLE I**  
**MAXIMUM DENSITY TESTS**  
**(ASTM: D1557-78)**

<u>Sample</u>	<u>Classification</u>	<u>Optimum Moisture</u>	<u>Maximum Dry Density (lbs./cu.ft.)</u>
I	SAND fine to medium grained, slightly clayey occasional gravel	11.0	124.0

**TABLE II**  
**COMPACTION TEST RESULTS**

<u>Date of Test</u>	<u>Test No.</u>	<u>*Depth</u>	<u>Percent Moisture</u>	<u>Unit Wt. lbs./cu.ft.</u>	<u>Relative Compaction</u>	<u>Soil Type</u>
12/18/98	101	10.0-10.5	11.5	117.4	95	I
1/4/99	102	0.0-0.5	10.0	115.4	93	I

\*Depth below finish grade (in feet)

\*\*Retest of failing tests after area reworked

NorCal Engineering



Existing Water Tower

Existing  
Warehouse  
(Bldg.19)

Existing Fuel Pumps



101

102

Tank Excavation

Existing 'Boneyard'



**NorCal Engineering**  
SOILS AND GEOTECHNICAL CONSULTANTS

Lopez

Approximate Location Of Compaction Tests

PROJECT 7819-98

DATE January, 1999

Scale 1"=20'